

Claims:

1. A method for combusting a liquid, gaseous, and/or particulate fuel at a low flame temperature and low pollutant emissions values, in which method fuel and incoming air are delivered to a combustion chamber (15) and are ignited in the combustion chamber (15), characterized in that

- the incoming air is blown into the combustion chamber (15) in two or more divergent incoming air jets (53) spaced apart from one another;

- by means of the blowing in of incoming air, peripheral underpressure zones (55) are created in the combustion chamber (15) between each two incoming air jets (53), and oxygen-poor exhaust gases present in the combustion chamber (15) are aspirated from outside, as a consequence of an underpressure in the peripheral underpressure zones (55), into the peripheral underpressure zones (55) between each two incoming air jets (53);

- and in which method, by the divergent blowing in of the incoming air jets (53) centrally between the two or more incoming air jets (53), a central underpressure zone (57) is created, and oxygen-poor exhaust gases present in the combustion chamber are aspirated axially and counter to the flow direction of the incoming air into the central underpressure zone (57).

2. The method according to claim 1, characterized in that a flow axis of each incoming air jet (53) is inclined relative to a center axis (31) common to the incoming air jets (43) and has a minimal spacing from the center axis (31) that is greater than zero, and the flow axes of the incoming air jets intersect one another in the chamber.

3. The method according to claim 1 or 2, characterized in that liquid fuel is injected axially with a nozzle (19) having a full-conical characteristic, mixed characteristic, or conical-jacket characteristic.

4. The method according to claim 3, characterized in that the conical apex angle of the nozzle (19) is at least 45°, advantageously over 60°, and at most 90°, and preferably is 80°.

5. The method according to one of claims 1-4, characterized in that gaseous fuel is

admixed with the incoming air upstream of the blocking disk (17), advantageously upstream of a fan for the incoming air.

6. The method according to one of claims 1-5, characterized in that the incoming air is blown out at a dynamic overpressure of 4 to 50 millibars, advantageously between 7 and 28 mbar.

7. A burner head for disposition on the end of an incoming air conduit (13) of a low-NO_x burner,

- having a blocking disk (17) closing off the incoming air conduit (13) on the downstream end,

characterized by

- a plurality of spaced-apart openings (45) in the blocking disk (17), for splitting up a majority of the incoming air into incoming air jets (53), which openings (45) are disposed in a ring;

- guide blades (23) at the openings (45) for guiding each incoming air jet (53), flowing out of the incoming air conduit (13) through an opening, in a divergent direction relative to the other incoming air jets (53);

- and blocking blades (27), which are disposed between the openings (45), so as to reach peripheral underpressure zones (57) between the incoming air jets (53).

8. The burner head according to claim 7, characterized in that the guide blades (23) at the openings (45) are uniformly inclined and guide the outflowing incoming air jets (53) in such a way that the flow axes of the incoming air jets intersect both one another and the center axis, common to the incoming air jets, in the chamber.

9. The burner head according to claim 7 or 8, characterized in that the blocking blades (27) and the guide blades (23) are embodied integrally with the blocking disk (17).

10. The burner head according to claim 9, characterized in that the blocking blades (27) and the guide blades (23) are shaped from a flat piece of sheet metal.

11. The burner head according to one of claims 7-10, characterized in that the blocking blades (27) are embodied trapezoidally, and the guide blades (23) are embodied adjoining one side of the trapezoid.

12. The burner head according to claim 11, characterized in that the guide blades (23), along one edge, in particular a bending edge (47), adjoin the blocking blades (27), and at this edge the guide blades (23) and blocking blades (27) form an angle of between 95° and 160° , preferably between 110° and 140° .

13. The burner head according to one of claims 7-12, characterized in that the openings (45) are embodied around a central body (19).

14. The burner head according to claim 13, characterized in that the central body is a fuel nozzle (19) for liquid fuel, and this fuel nozzle has a full-conical characteristic, mixed characteristic, or conical-jacket characteristic.

15. The burner head according to claim 13 or 14, characterized in that the guide blades (23) accompany the central body (19) in the flow direction of the incoming air.

16. The burner head according to claim 14, characterized in that there is a fine annular gap around the fuel nozzle (19), so as to deliver only a small quantity of the incoming air to the fuel stream through the annular gap.

17. The burner head according to one of claims 7-16, characterized in that around the ring of openings (45), there are secondary air openings in the blocking disk (17), spaced apart from the openings (45).

18. A blue-flame burner having an incoming air fan, an adjoining incoming air conduit (13), a fuel delivery means, an electric ignition (21), and a burner head as defined by one of claims 7-16.

19. The blue-flame burner according to claim 18, characterized by a gas delivery means

and an oil nozzle (19).

20. A boiler having a boiler chamber, a heat exchanger (75), and a burner as defined by claim 18 or 19.

21. The boiler according to claim 20, characterized in that the boiler chamber is subdivided by a heat exchanger (75) into a central combustion chamber (15) and an exhaust gas chamber (77) encasing the combustion chamber parallel to the inflow direction of the incoming air.

22. The boiler according to claim 21, characterized in that the heat exchanger (75) is a gap coil heat exchanger.

23. An aperture plate (37) for a burner head of a low-NO_x burner and for use at the end of a burner pipe (13), characterized by a plurality of spaced-apart openings (45) for splitting up a majority of the incoming air into incoming air jets (53), which openings (45) are disposed in a ring;

- guide blades (23) at the openings (45) for guiding each incoming air jet (53), flowing out of the incoming air conduit (13) through an opening, in a divergent direction relative to the other incoming air jets (53);

- and blocking blades (27), which are disposed between the openings (45), so as to reach peripheral underpressure zones (57) between the incoming air jets (53).